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and H, and produce them indefinitely. The dotted lines  $c e$ ,  $d f$ , are the seats of the last entire common rafters. Through any point in the ridge line I, draw E I F at right angles to G H. Make I K equal to the height of the roof, and join E K, F K: then E K is the length of a common rafter. Make G o, H o equal to I K, the height of the roof; and join A o, B o, C o, D o, for the lengths of the hip-rafters. If the triangles A o G, and B o G, be turned round their seats, A G, B G, until their planes are perpendicular to the plane of the plan, the points o o, and the lines G o, G o, will coincide, and the rafters A o, B o be in their true positions.

*Let A B C D (Fig. 2) be the plan of an irregular roof, in which it is required to keep the ridge level:*

Bisect the angles of two ends by the lines A b, B b, C G, D G, in the same manner as before; and through G draw the lines G E, G F parallel to the sides C B, D A, respectively, cutting A b, B b in E and F; join E F: then the triangle E G F is a flat, and the remaining triangle and trapeziums are the inclined sides. Join G b, and draw H I perpendicular to it: at the points M and N, where H I cuts the lines G E, G F, draw M K, N L perpendicular to H I, and make them equal to the height of the roof: then draw H K, I L for the lengths of the common rafters. At E set up E m perpendicular to B E; make it equal to M K or N L, and join B m for the length of the hip-rafter; and proceed in the same manner to obtain A m, C m, D m.

*To find the hip and valley rafters of a compound irregular roof (Fig. 3):*

In the compound roof shown by the plan, in which the ridge is level throughout, although the buildings are of different widths, the method of proceeding to find the hip and valley rafters of the right-lined parts of the roof is the same as in the two former cases, and will be evident on inspection. In the circular part proceed as follows: Draw  $c d$  a radius to the curve, as the seat of one pair of the common rafters  $c b$ ,  $d b$ , and bisect it in  $a$ : through  $a$  describe the curve  $k a W n a$ , which is the seat of the circular ridge: produce the lines of the other ridges to meet this curved line in  $a W k$ , and connect the angles of the meeting roofs with these points, as in the drawing: divide the seat of one pair of the common rafters in each roof, as X Y, P Q, T U, and  $e f$ , into the same number of equal parts; and through the points of division draw lines parallel to the sides of their respective roofs, intersecting the curved lines drawn through the points of the curved roof; and through the points of intersection draw the curves C,  $l$ ,  $m$ ,  $a$ , etc., which give the lines of the hips and valleys. On C  $a$ , the meeting of the left-hand roof with the

circular roof, erect  $a b$  at  $a$ , and make it equal to the height of roof; and join C b for length of valley rafter: proceed in the same manner for the hip-rafter Z b; and for the other hip and valley rafters.

*To find the valley rafters at the intersection of the roof B with the conical roof E (Fig. 4):*

Let D H, F H be the common rafters of the conical roof, and K L, I L, the common rafters of the smaller roof, both of the same pitch. On G H set up G e equal to M L, the height of the lesser roof, and draw  $e d$  parallel to D F, and from  $d$  draw  $c d$  perpendicular to D F. The triangle D d c will then by construction be equal to the triangle K L M, and will give the seat and the length and pitch of the common rafter of the smaller roof B. Divide the lines of the seats in both figures, D c, K M, into the same number of equal parts; and through the points of division in E, from G as a centre, describe the curves  $c a$ ,  $2g$ ,  $1f$ , and through those in B, draw the lines  $3f$ ,  $4g$ , M a, parallel to the sides of the roof, and intersecting the curves in  $f g a$ . Through these points trace the curves C f g a, A f g a, which give the lines of intersection of the two roofs. Then to find the valley rafters, join C a, A a; and on a erect the lines  $a b$ ,  $a b$  perpendicular to C a and A a, and make them respectively equal to M L; then C b, A b is the length of the valley rafter, very nearly.

## Correspondence.

We invite communications from our readers in matters connected with the trades we represent. Be brief, courteous, and to the point.

*Editor of Illustrated Wood-Worker:*

THE packages of drawing received all right; am very much pleased with them, also with "Hints on Estimating," which is well worth the money. I take the WOOD-WORKER through our news-agent here, and like it very much and join with Mr. Randolph in wishing that it might be published weekly, as it is a first-class paper and suited to the wants of all wood-workers.

E. D. SAWIN.

SPRINGFIELD, VERMONT, Aug. 4, 1879.

*Editor of Illustrated Wood-Worker:*

I HAVE taken your ILLUSTRATED WOOD-WORKER from the first, and am much pleased with it. There are many fine designs contained therein, but still there seems to be something wanting especially to the *Amateur*, and that is, a working model and a guide for measurement. I think each book-case, etc. should have a skeleton drawing accompanying it, so marked that it could be easily determined how to put it together. The outside does not give any idea of how the inside is

arranged. Then a scale of measurement would also be very handy so that one would know what thickness of wood to use, what height, width, length, etc., the articles are to be. I would like if some of the designers for your paper would draw some pretty models for statuary pedestals, solid and skeleton, giving dimensions; also some cornices for lace curtains in different styles (with pole and rings especially). The department of cabinet work is the one which interests me most and I hope to see it occupy a prominent place and that a variety of designs will be given including all that would be necessary to furnish a parlor, etc.

AMATEUR.

BROOKLYN, N. Y., Aug. 9, 1879.

*Editor of the Illustrated Wood-Worker :*

I FIND your paper very interesting and instructive in many respects, but as I am a pattern-maker by trade, I should like to see something in that trade once in a while. I presume, however, that my trade is out of your line, and that your paper is designed especially for carpenters, joiners, and cabinet-makers; an item, however, now and again, bearing on my vocation, would be very acceptable to me, and would, I am sure, be of interest to many of your subscribers.

ALBERT B. ENTWISLE.

SPRING CITY, July 30, 1879.

*Editor of the Wood-Worker :*

HAVING for some time past been trying to master the art of carpentry and joinery, and not feeling satisfied with the manner in which I am progressing, I thought I would ask you if it would be better for me to try and procure a situation under some good builder in a city—if so, is there any choice in location? 2. How can one find a good, reliable builder who will lend his aid and good-will to an apprentice?

APPRENTICE.

*Editor of the Wood-Worker :*

IN answer to David A. Hall, who asked for a reply in July issue of the *W. W.*, I would say that the figure on the left (Plate 37) represents the desk finished; the one on the right, the inside arrangement. The cresting shown under the shelves, is stamped leather. The ornamentation of panels, drawers, etc., is incised work, and may be finished in black or gold, or left plain. The total cost of lumber, mouldings and furniture, was about twenty-six dollars.

GEO. O. WOODCOCK.

CLAREMONT, N. H. Aug. 7, 1879.

[Communications received from T. M., Central Square, N. Y., W. H. Croken, Orillia, Ont., and several others.—ED.]

## Intercommunication.

THIS department is intended to furnish, for the benefit of all our readers, practical information regarding the art of manipulating wood by hand or machinery; and we trust that every reader of our paper will make the fullest use of it, both in asking and answering. All persons possessing additional or more correct information than that which is given relating to the queries published, are cordially invited to forward it to us for publication. All questions will be numbered, and in replying it will be absolutely necessary, in order to secure due insertion, that the NUMBER and TITLE of the question answered should be given; and in sending questions, the title of key-words of the question should be placed at the head of the paper. Correspondents should in all cases send their addresses, not necessarily for publication, but for future reference. We also request that all questions or answers be written on separate slips of paper, and addressed to the Editor. Notes of practical interest will be welcome at all times. When drawings are sent to illustrate answers to questions, or for full pages, they should be on separate slips, and should be drawn in ink on clean, white paper. Short questions, requiring short answers, may be asked and answered through the agency of postal cards.

When answers to questions are wanted by mail, the querist must send a stamp for return postage.

## Queries.

63. STATUARY.—If a St. John was to stand thirty feet up from the pavement on a corbel, on a church tower, what would be a proper height to give the figure from sole to crown?  
O. K.

64. TEST.—Will you, or some of the readers of the *WOOD-WORKER*, give a test for pure linseed oil? Answer through the *WOOD-WORKER*.—SPRING-BEVEL.

65. ROSEWOOD.—If some kind fellow-reader of the *WOOD-WORKER* will kindly inform me how to imitate rosewood, I shall be very much pleased.—KNOT.

66. CARVINGS.—I am an amateur wood-carver, and have done some work that my friends pronounce as creditable, I wish to polish it, but am unacquainted with the process of polishing work of this kind; will some of your readers who understand it be kind enough to inform me how it is done?—RICHARD.

67. DECORATION.—Please inform me how house flower-pots are decorated with "decalcomanie?" I have tried to ornament flower-pots with decalcomanie on several occasions and have failed every time. Any information or hints will greatly oblige.—NELLIE.

68. MORTISE AND TENON.—What is the proper proportion of a tenon and mortise to the size of the timber operated upon?—CARPENTER.

69. VENEER.—Please inform me how a veneered surface can be cleaned and prepared for varnish or polishing?—TYRO.

70. FURNITURE PASTE.—Will some kind reader inform me how furniture paste is made?—IRISHMAN.

71. PICTURE FRAME.—How are the figures on panels, plates 25, 33, 41, etc., produced; simply cut out of the wood, or are they inlaid? If incised, are they stained or painted? What tools are used? Wood carvers', or can it be done with more common ones?